SYSTEM X

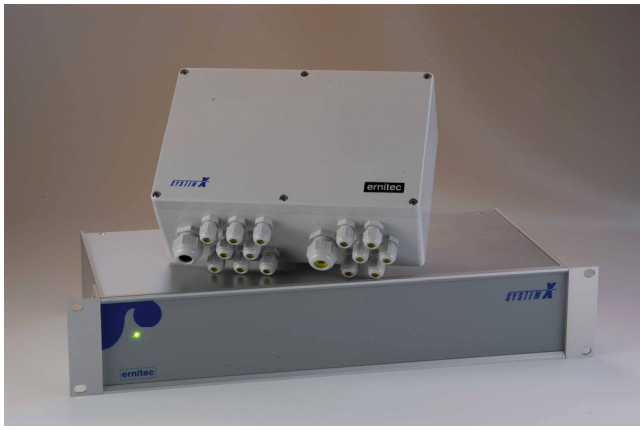
Alarm Interfaces

ernitec

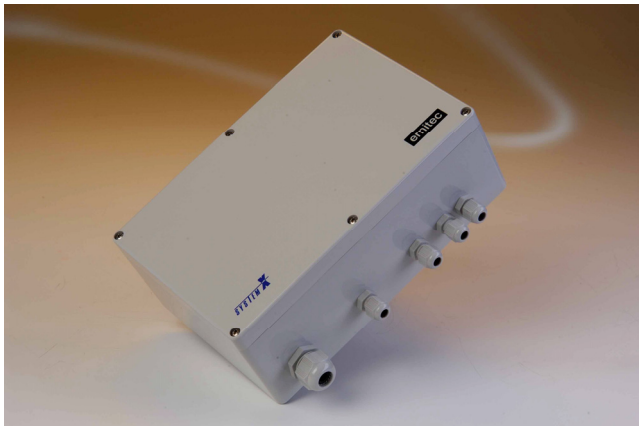
System-X offers a variety of alarm interfaces suitable for different applications. The possibilities are:

Product	Description
I141DX	Alarm interface with 8 alarm inputs and 8 AUX outputs, 115/230 VAC
I121DX	Alarm interface with 128 alarm inputs and 8 AUX outputs, 115/230 VAC
I151SX-ALARM	Serial Alarm interface with RS-232 connection to alarm system, 115/230 VAC

All three types can be used simultaneously in a System-X installation.



The I121DX (bottom) and I141DX (top) Alarm Interfaces



The I151SX-ALARM Serial Alarm Interface

Functions

Alarm Inputs
The I141DX has 8 alarm inputs. They can be programmed to either Normally Open or Normally Closed. Furthermore, the priority of each alarm can be selected. All of this is done from the NodeManager installation software. The following picture shows the programming of the alarms in NodeManager.

The I141DX Alarm box provides 8 alarm inputs and 8 AUX control outputs on a System-X. The alarm box is installed anywhere near one or more alarm sensors and will broadcast alarms on the LON network. The devices, e.g. matrix and telemetry receivers, which have been programmed to react on that alarm will then do as programmed.

The I141DX alarm box also has 8 potential free relay outputs that can be used to activate various devices, e.g. switch on/off lights, open/close gates and doors, etc.

The I141DX alarm box is IP65 rated making it suitable for outdoor installations.

I121DX
The I121DX offers 128 alarm inputs and 8 aux outputs. The inputs and outputs are grouped in four connectors, each with 32 inputs and 2 outputs. The connectors are pin compatible with the alarm connector on an Ernitec system 500M and 1000M thereby making an upgrade from 500M/1000M to System-X very easy.

Alarm Filtering
Each alarm input can be "filtered", i.e. programmed so that it must be activated for a certain period before it is regarded as a valid alarm. The filter period can be set between 1 and 10 seconds in 1 second intervals.

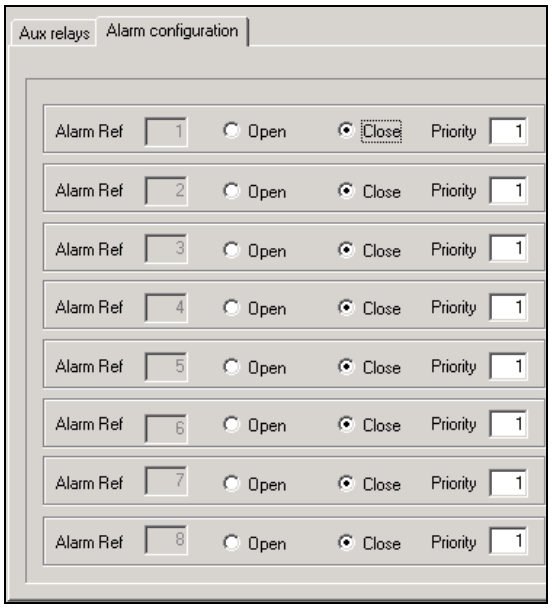
Alarm Combinations
All alarm inputs can be used in logical combinations. For example, the I121DX can be programmed so that an alarm is not generated until both ALARM 1 and ALARM 2 are active. The combinations can be made in two levels, e.g. (ALARM 1 AND ALARM 2) or (ALARM 3 AND ALARM 4).

The logical alarm combinations can be used in a number of situations, e.g. to provide verified alarms or where certain conditions must be met before an alarm is generated. A typical application is for example an entrance with two doors where it is legal to have one open door, but having two doors open simultaneously is not. The I121DX is simply programmed to react to two open doors.

Alarm Hold
In some situations, it may be desirable to hold an alarm longer than the sensor allows. For example, many PIRs reset the alarm contact a few seconds after no motion is detected. The I121DX can prolong the duration of the alarm by up to 20 seconds. This can be useful if for example the system is unmanned, but a recording needs to be continued after the alarm is cleared.

AUX Outputs
The I121DX features 8 aux outputs, four of which are relays and the other four are open collectors.

All relay outputs can individually be programmed to either Normally Open (NO) or Normally Closed (NC) operation. Furthermore, all outputs, both relay and Open Collector, can be programmed to either latched or non-latched operation. When programmed to latched operation, it is possible to set a time-out. The time-out will make the aux output go back to the normal position once it has expired. This will prevent e.g. a gate from being left open all night. If no time-out is defined (0 sec.), the output will remain activated until the operator deactivates it.



Set-up of alarm inputs

I141DX

AUX Outputs
The I141DX alarm box has 8 relay outputs that can be programmed to either Normally Open or Normally Closed operation. Furthermore, they can be programmed to either latched or non-latched operation. When programmed to latched operation, it is possible to set a timeout. The timeout will make the relay go back to the normal position once it has expired. This will prevent e.g. a gate from being left open all night. If no time-out is defined (0 sec.), the output will remain activated until the operator deactivates it.

The NodeManager has a test function that allows the installer to operate the relay outputs from the software in order to verify the operation of the relays.

I151SX-ALARM
The I151SX-ALARM provides a serial alarm interface to e.g. access control systems, fire alarms, intrusion alarms etc. Rather than hardwiring the alarms from such systems to either an I121DX or an I141DX, the alarms can be transferred through an RS-232 interface directly to System-X.

The I151SX-ALARM can also provide an alarm logging function whereby alarms in System-X can be sent on an RS-232 interface to e.g. an alarm management system or a serial printer for logging.

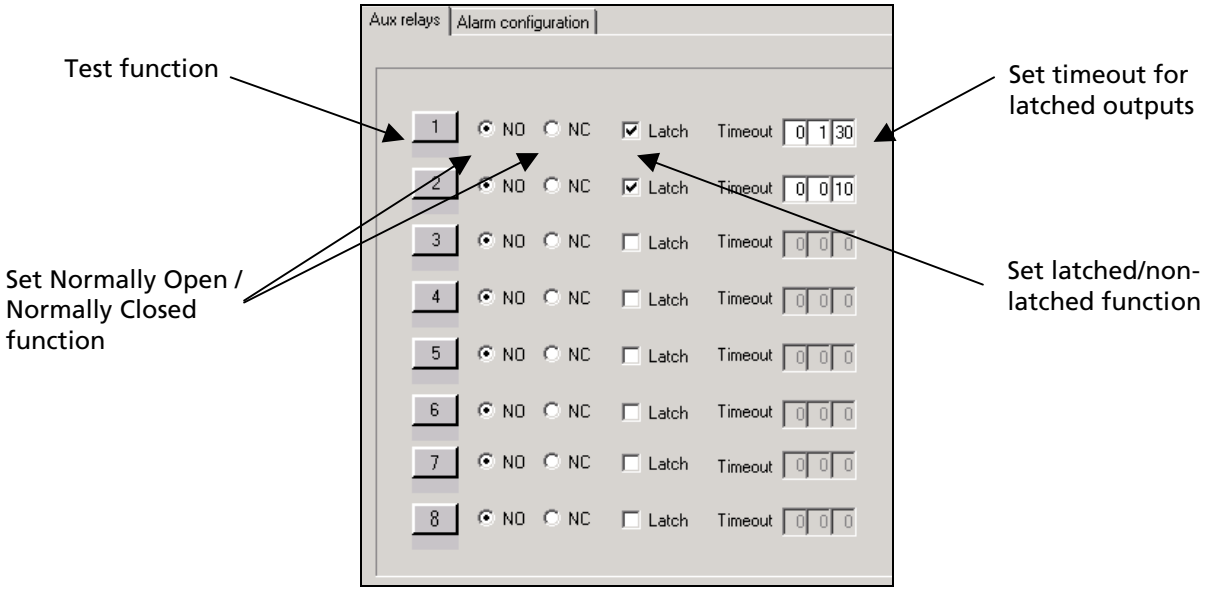
The protocols currently supported are:

Protocol	Description
SAP	Simple Alarm Protocol, supports up to 512 alarms, compatible with Serial alarms on 500M/1000M
xSAP	Extended Simple Alarm Protocol, same as above protocol, but extended to handle 1024 alarms
IEC	IEC Alarm protocol, supports up to 1024 alarms
LOG	Alarm logging function

Please note that only one of these protocols can be active at any one time.

Please contact your nearest Ernitec office for a complete protocol description.

The picture below shows the programming of the AUX outputs from the NodeManager installation software.

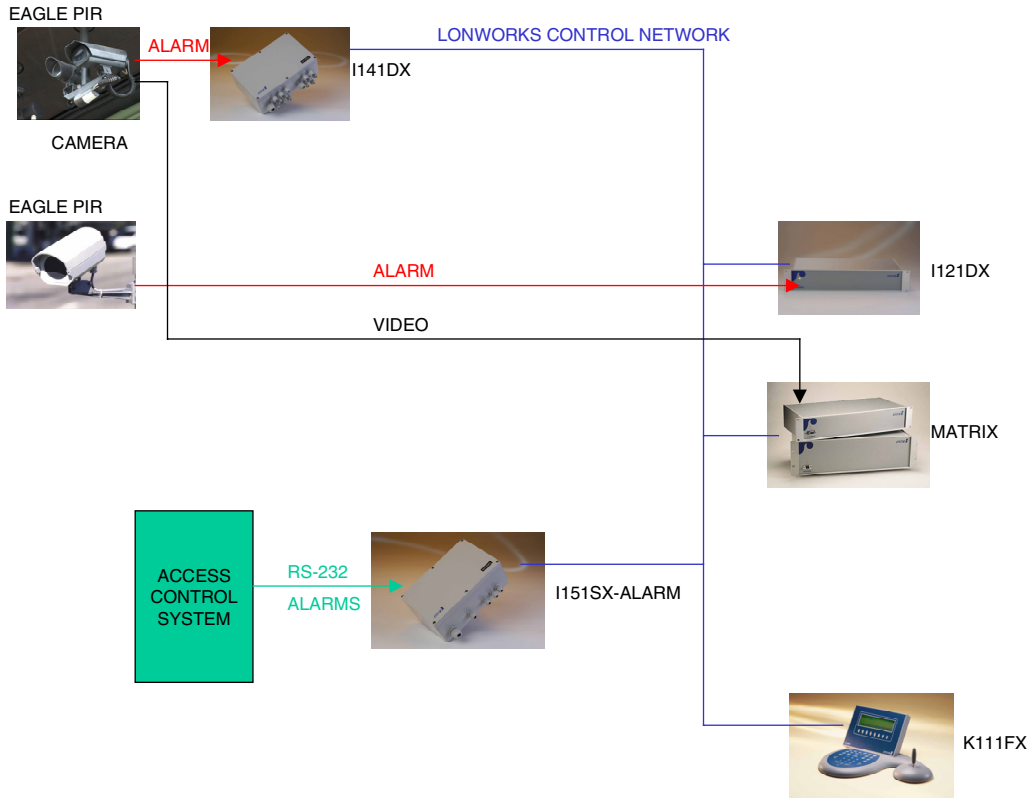


Set-up of AUX outputs

Applications

The following block diagram shows examples of how the various alarm interfaces are used. The I141DX is located close to the alarm sensor and alarms are transferred over one twisted pair cable. The I121DX is installed in the control room and all alarms must be wired from the sensors to the I121DX on separate cables.

Finally, the I151SX-ALARM is connected to an access control system through RS-232. Depending on how the access control system is programmed, is can send alarms to System-X if e.g. somebody swipes an invalid card, forces a door open, etc.



Block diagram of how to use the various alarm interfaces

Specifications

	I121DX	I141DX	I151SX-ALARM
AUX outputs			
Number of relay outputs	4	8	0
Number of OC outputs	4	0	0
Max. voltage, relays	30 V	230 VAC	
Max. current, relays	1 A	5 A	
Max. voltage, OC O/P	24 VDC		
Max. current, OC O/P	100 mA		
Function	Programmable latched/non-latched		
Time-out	Up to 12 hrs. in steps of 1 sec.		
Contacts	Normally Open / Normally Closed, programmable for each output		
Connectors	4 pcs. 35 pin D-Sub		
Hardwired Alarm inputs			
Number of inputs	128	8	
Signal level	Voltage-free or TTL		
Max. loop resistance	1 kohm		
Function	Normally Open / Normally Closed		
Priority levels	1 to 49		
Alarm combinations	Yes	No	No
Alarm filtering	1 to 10 sec.		
Serial Alarm inputs			
Number of serial interfaces			1
Interface type			RS-232
Baudrate			110 to 38400
Dataformat			8N1
Protocols			SAP, xSAP, IEC, LOG
Max. number of alarms			1024, depending on protocol
Priority levels			1 to 49
Control Network Interface			
Interface type	LonWorks 78 kbit/s FTT-10A		
Environmental specifications			
Power supply	115 / 230 VAC ±10%, 45 – 60 Hz		
Current consumption	35 mA @ 230 VAC 70 mA @ 115 VAC	30 mA @ 230 VAC 60 mA @ 115 VAC	33 mA @ 230 VAC 66 mA @ 115 VAC
Operating temperature	0°C to 40°C 32°F to 104°F	-10°C to +55°C 14°F to 131°F	
Humidity	< 85%	< 95%	
IP rating	Not applicable	IP 65	
Enclosure material	Aluminium	ABS Plastic	
Cable glands		2 pcs. M20 (7-12 mm) 14 pcs. M12 (3-6 mm)	1 pc. M20 (7-12mm) 4 pc. M12 (3-6mm)
Dimensions (W x H x D), excl. cable glands	426 x 89 x 214 mm (19”, 2HU) 16.8” x 3.5” x 8.4”	242 x 160 x 90mm 9.5” x 6.3” x 3.5”	
Weight	2.9 kg / 6.4 lbs	1.4 kg / 3.1 lbs	
EMC	EN 50081-1, EN 50130-4		
Safety	EN 60950		

LONWORKS, also known as LON, is a communication network. As opposed to TCP/IP (Ethernet), LONWORKS is designed for control applications such as building automation, transportation, home automation, security and other systems. For more information about LONWORKS, please refer to www.echelon.com.

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